

REMARKS

Claims 1, 3, 5-10, 15, and 18-23 are currently pending, wherein claims 1, 5, 6, 8, 9, and 21 have been amended. Favorable reconsideration and entry of the above-identified amendment are respectfully requested.

In paragraph 2 of the final Office action ("Action"), the Examiner rejects claim 15 under 35 U.S.C. § 101 because the claim is allegedly directed to non-statutory subject matter. More specifically, the Examiner asserts that "instructions" are non-functional material and therefore not statutory. Applicants respectfully disagree. Claim 15 defines a tangible computer readable medium having stored thereon instructions (i.e., a program) for causing a processor to carry out a method as defined in claim 1. Contrary to the Examiner's asserts the instructions/program for carrying out the method of claim 1 is not tantamount to non-functional material. Reconsideration and withdrawal of the rejection is respectfully requested.

In paragraph 4 of the Action, the Examiner rejects claims 1 and 3-10 under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent No. 5,825,423 to Jung ("Jung"). Applicants respectfully traverse this rejection.

In order to support a rejection under 35 U.S.C. § 102, the cited reference must teach each and every claimed element. In the present case, claims 1, 3, and 5-10 are patentable over Jung for at least the reason that Jung fails to disclose a method of approximating a motion vector for an image block for concealment of a lost or damaged motion vector as claimed. More specifically, Jung fails to disclose deriving a first set of vectors from motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding or subsequent frames; deriving a set of candidate vectors from one or

more motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding or subsequent frames; deriving an estimated motion vector from the first set of vectors; comparing the candidate vectors with the estimated motion vector; selecting one of the candidate vectors on the basis of similarity to said estimated vector; and utilizing the selected vector to conceal a lost or damaged motion vector.

In rejecting claim 1, the Examiner points to Fig. 2 of Jung as disclosing the claimed method. More specifically, the Examiner points to reference numerals 214 and 216 as disclosing the claimed steps of deriving first and second sets of vectors from motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding and/or subsequent frames. However, the Examiner's reliance on Jung is unfounded.

First, Jung is concerned with a method of determining a motion vector of an image block between a current frame and a previous frame as part of a motion compensated interframe encoding scheme (see column 1, lines 26-35 of Jung). In other words, Jung is concerned with a method for encoding image data for transmission, not concealment of lost or damaged motion vectors when decoding received image data as in the present invention.

Furthermore, as clearly illustrated in Fig. 2 of Jung, the motion vectors are detected on the basis of codewords, *not* derived from *motion vectors* of neighbouring blocks as claimed. Indeed, it is self evident that the encoding method of Jung cannot include motion vectors derived from motion vectors of the same or neighbouring blocks in the same/preceding frame, because the image data of Jung has not been encoded yet. Thus, the image data in Jung cannot include motion vectors for neighbouring blocks, because the motion vectors have not been derived yet.

Therefore, Jung fails to anticipate claim 1 for at least the reason that Jung fails to disclose each and every claimed element.

In response to Applicants arguments, the Examiner asserts that Jung teaches a method of approximating a motion vector for an image block for concealment of a lost or damaged motion vector because “minimum error is considered a lost or damage motion vector, the concealment is selecting the best motion vector that represent the macroblock.” The Examiner’s assertion is unfounded. The motion vectors as they are utilized in encoding and decoding images is a well known term of art, and does not refer to “minimum error” as suggested by the Examiner. As discussed above, Jung is concerned with the determination of a motion vector for an image block, i.e., with the creation of motion vectors, not with the concealment of a lost or damaged motion vector as claimed.

In addition, the Examiner asserts that Jung teaches deriving a first set of vectors from *motion vectors* of neighbouring in as much as Jung teaches detecting a motion vector on the basis of codewords which the Examiner considers to be equivalent to a motion vector. As discussed above a “motion vector” is a well know term of art, and is in no form equivalent to the codeword’s of Jung. The codewords of Jung represent a number of moving object patterns which are designed to serve as a guide for regionalizing or approximating the actual boundary of the search block. Although these codewords or object patterns are used to derive a motion vector of the block, they are not themselves motion vectors. Accordingly, Jung cannot be interpreted as disclosing the steps of deriving a first set of vectors from motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding or subsequent frames; and deriving a set of candidate vectors from one or more of

motion vectors of neighbouring blocks in the same frame and the corresponding block and its neighbouring blocks in one or more preceding or subsequent frames.

Claims 3 and 4-10 variously depend from independent claim 1. Therefore, claims 3 and 4-10 are patentable over Jung for at least those reasons presented with respect to claim 1. Reconsideration and withdrawal of the rejection of claims 1, 3, and 5-10 under 35 U.S.C. § 102 is respectfully requested.

In paragraph 7 of the Action, the Examiner rejects claims 1, 3-10, 18, 19, and 21-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,912,707 to Kim ("Kim"). Applicants respectfully traverse this rejection.

In order to support a rejection under 35 U.S.C. § 103, the Examiner must establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness three criteria must be met. First, there must be some rationale to combine the cited references. Second, there must be a reasonable expectation of success. Finally, the combination must teach each and every claimed element. In the present case, claims 1, 3, 5-10, 18, 19, and 21-23 are patentable over Kim for at least the reason that Kim fails to disclose each and every claimed element as discussed below.

Independent claims 1 and 21 define methods of approximating a motion vector for an image block for concealment of a lost or damaged motion vector. The method of claim 1 includes, *inter alia*, deriving an estimated motion vector from a first set of vectors; comparing the vectors from a set of candidate vectors with the estimated motion vector; and selecting one of the candidate vectors on the basis of similarity to said estimated vector. The method of claim 21 includes, *inter alia*, determining an overall vector correlation between the vectors of a first set of

motion vectors and the vectors of a candidate set and approximating the motion vector from one or more of the motion vectors from the first set or candidate set on the basis of the overall vector correlation.

Kim discloses an error concealment method for producing a substitution block to conceal a lost block. The method includes detecting a lost block in a current frame; extracting pixel values and motion vectors corresponding to neighbouring blocks of the lost block in the same frame; calculating a motion variance of the motion vectors and comparing the motion variance with predetermined thresholds; generating first and second substitution blocks; and selecting the first or second substitution blocks based in part on the comparison of the motion variance with predetermined thresholds. However, nowhere in Kim is there any disclosure or suggestion of a method for approximating a motion vector for an image block for concealment of a lost or damaged motion vector as claimed. More specifically, nowhere in Kim is there any disclosure or suggestion of (1) deriving an estimated motion vector from the first set of vectors, comparing the candidate vectors with the estimated motion vector and selecting one of the candidate vectors on the basis of similarity to said estimated vector as recited in claim 1, or (2) approximating the motion vector from one or more of the motion vectors from the first set or candidate set on the basis of the overall vector correlation as recited in claim 21.

In rejecting claims 1 and 21, the Examiner points to the selection unit 270 of Fig. 2 as disclosing the claimed steps of comparing the candidate vectors and selecting one of the candidate vectors on the basis of similarity to the estimated vector. Although the selection unit 270 of Kim makes a selection based in part on the motion variance of the neighboring motion vectors, it does not select a candidate motion vector as claimed. To the contrary, the selection

unit 270 of Kim selects between a first and second substitution block. Furthermore, Kim does not disclose or suggest two sets of vectors as claimed. Accordingly, claims 1 and 21 are patentable over Kim for at least the reason that Kim fails to disclose or suggest each and every claimed element.

Claims 3, 5-10, 18, 19, 22, and 23 variously depend from claims 1 and 21. Therefore, claims 3, 5-10, 18, 19, 22, and 23 are patentable over Kim for at least those reasons presented above with respect to claims 1 and 21. Reconsideration and withdrawal of the rejection of claims 1, 3, 5-10, 18, 19, and 21-23 is respectfully requested.

In paragraph 8 of the Action, the Examiner rejects claims 15 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of U.S. Patent No. 7,133,455 to Henning ("Henning"). Applicants respectfully traverse this rejection.

Claims 15 and 20 variously depend from independent claim 1. Therefore, claims 15 and 20 are patentable over Kim for at least those reasons presented above with respect to claim 1. Henning discloses an apparatus for providing error concealment in a video phone system. However, Henning fails to overcome the deficiencies of Kim.

Since Kim and Henning both fail to disclose or suggest a define method of approximating a motion vector for an image block for concealment of a lost or damaged motion vector as claimed, the combination of these two references cannot possibly disclose or suggest said method. Therefore, even if one skilled in the art did have a rationale to combine Kim and Henning, the combination would still fail to render claims 15 and 20 unpatentable because the combination fails to disclose each and every claimed element. Reconsideration and withdrawal of the rejection of claims 15 and 20 under 35 U.S.C. § 103 is respectfully requested.

The application is in condition for allowance. Notice of same is earnestly solicited. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Penny Caudle Reg. No. 46,607 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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